NEW YORK UNIVERSITY MEDICAL CENTER

550 FIRST AVENUE, NEW YORK, N.Y. 10016
AREA 212 679-3200
CABLE ADDRESS: NYUMEDIC

Department of Biochemistry

June 12, 1970

Patrick P. McCurdy, Editor
Chemical & Engineering News
1155 Sixteenth Street, N.W.
Washington, D.C. 20036

Dear Sir:

The lead story "Scientists Synthesize a Gene" that appeared in the June 8 issue of C & E News represents a distressing example of irresponsible journalism. The article not only contains errors of fact, but through statements reported to have come from another noted scientist, it degraded the truly great scientific achievement of Khorana's group. Most importantly, the story missed the point of this work.

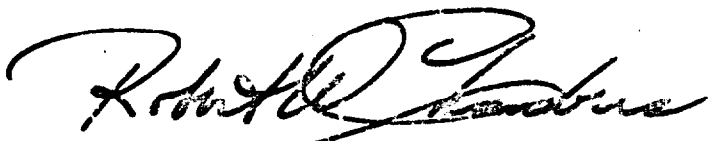
Stated most simply, Khorana's synthesis achieves for the first time the complete synthesis of a genetic unit and opens the door to a new era in chemistry and biology in which scientists will be able to vary the structure of a gene at will. Khorana did not use a preexisting template as indicated in your article. In fact, the entire purpose of Khorana's work (in contrast to that of Kornberg and Spiegelman) has been to synthesize a gene without relying on a preexisting template so that the exact sequence of nucleotides can be predetermined by the chemist.

The strategy of the synthesis is deceptively simple. One builds separately the complementary strands of DNA in blocks of approximately twenty nucleotides. Each of these blocks is synthesized by stepwise addition of nucleotides so that the investigator has complete control over the sequence. Then, for purely technical reasons, these blocks are joined by an enzyme, polynucleotide ligase, to give the completed DNA consisting of two complementary strands. The experimental difficulty of this task, however, is almost impossible to convey to those who have not actually worked in this field.

The importance of this achievement is not whether the gene that has been synthesized is biologically active or whether the tRNA that it is supposed to produce must be modified in order to function.

This particular synthesis demonstrates that the methods developed by Khorana and his colleagues over the past 15 years work. Man now has in his grasp the ability to synthesize genetic material at will. For the first time he has the power not only to duplicate preexisting genes, but to create new ones by design rather than by chance. What he can and will do with this power remains to be seen. Some exciting answers may come from the work on tyrosine-supressor gene. If all goes well, this man-made gene should be able to "correct" a genetic defect in a mutant of the bacterium, E. coli.

It is distressing to me that the official news medium of the American Chemical Society can not describe accurately such an important achievement. It is even more disturbing that it would publish remarks attributed to another noted scientist (Dr. Spiegelman) which, as they were published, seriously detract from a truly great scientific discovery at a time when it is important that we restore the prestige which scientists have recently lost. To pass off this work with remarks such as "a technical achievement, rather than a real breakthrough" and "something less than creating a living system out of whole cloth" is not only ridiculous, but damaging to the public image of science. There are very few scientific achievements that rank with this one, as I am sure history will show. Seldom has any one scientist so completely dominated a field. The real breakthrough occurred in 1953 when Khorana, armed only with dicyclohexylcarbodiimide and a dream, decided to work on nucleotide chemistry. That dream is now a reality. I hope that C & E News will publish a feature article in the near future that describes accurately this truly great achievement by a truly great scientist.



Robert W. Chambers
Professor of Biochemistry
New York University School
of Medicine
New York, N.Y.